

I CLAIM.

1. A portable, pedal driven propellor and drive shaft apparatus for use in a watercraft (1) having gunwhales (15,16), characterised by:

- (a) a substantially quadrilateral frame (11,12,13,14) adapted to be releasably mounted on the gunwhales (15,16) of said watercraft (1);
- (b) operator seat means (4) mounted on said quadrilateral frame (11,12,13,14);
- (c) pedal crank means (5,6) mounted forwardly of, and depending from, said quadrilateral frame (11,12,13,14) and operable by an operator (3) sitting on said seat means (4);
- (d) a gear box (32) pivotally mounted on said quadrilateral frame (11,12,13,14) so as to lie to one side of the operator seat means (4) and forward thereof when in operative position;
- (e) means to transmit motive power generated by said pedal crank means (5,6) to said gear box (32), said means to transmit motive power comprising first drive means (7,8,9) operatively connected to said pedal crank means (5,6) and to a first end of a first transverse drive shaft (10), second drive means (22,23,24) operatively connected to a second end of said first transverse drive shaft (10), a second transverse drive shaft means (25,27,29,30,31,47,33,34), operatively connected at a first end thereof to said second drive means (22,23,24) and operatively connected at a second end thereof to said gear box (32); and
- (f) longitudinal drive shaft means (54,35A,2,38) comprising a longitudinal shaft (2) operatively connected at a first end thereof to said gear box (32) and, at a second end thereof, to propeller means (40);

said gear box (32) and longitudinal drive shaft means (54,35A,2,38) being adapted to be pivoted, when mounted on said watercraft (1), about a horizontal transverse axis so as to raise said propeller means (40) to an inoperable position wherein said longitudinal drive

shaft means (54,35A,2,38) is substantially parallel to said gunwhales, and lower said propeller means (40) to an operative position wherein said longitudinal drive shaft means (54,35A,2,38) is at an acute angle relative to said gunwhales.

2. The apparatus according to claim 1, characterized in that said second transverse drive shaft means (25,27,29,30,31,47,33,34) includes slideable means (29,30) to enable selective engagement and disengagement between said second drive means (22,23,24) and said gear box (32).

3. The apparatus according to claim 1 or 2, characterized in that said gear box (32) is mounted on said quadrilateral frame (11,12,13,14) so as to lie outboard of one of said gunwhales (15,16) when in the operative position.

4. The apparatus according to any one of claims 1 to 3, characterized in that said second transverse drive shaft means (25,27,29,30,31,47,33,34) is rotatably mounted in transverse tube means (31) mounted on said quadrilateral frame (11,12,13,14).

5. The apparatus according to any one of claims 1 to 4, characterized in that said second transverse drive shaft means (25,27,29,30,31,47,33,34) includes first bevel gear means (33) at said second end thereof.

6. The apparatus according to claim 5, characterized in that said longitudinal drive shaft means (54,35A,2,38) includes second bevel gear means (54) at said first end thereof.

7. The apparatus according to claim 6, characterized in that said first (33) and second (54) bevel gear means are contained within said gear box (32) and mounted at right angles to each other for meshing engagement.

8. A portable, pedal driven propellor and drive shaft apparatus for use in a watercraft (1) having gunwhales (15,16), characterised by:

- (a) a substantially quadrilateral frame (11,12,13,14) adapted to be releasably mounted on the gunwhales (15,16) of said watercraft (1);
- (b) operator seat means (4) mounted on said quadrilateral frame (11,12,13,14);
- (c) pedal crank means (5,6) mounted forwardly of, and depending from, said quadrilateral frame (11,12,13,14) and operable by an operator (3) sitting on said seat means (4);
- (d) pulley means (81,82,83) pivotally mounted on said quadrilateral frame (11,12,13,14) so as to lie to one side of the operator seat means (4) and forward thereof when in operative position;
- (e) means to transmit motive power generated by said pedal crank means (5,6) to said pulley means (81,82,83), said means to transmit motive power comprising drive means (7,8,9), a transverse drive shaft (60,63) and flexible cable-drive means (67,68,69,72,75,80), said drive means (7,8,9) being operatively connected to said pedal crank means (5,6) and to a first end of the transverse drive shaft (60,63), and said flexible cable-drive means (67,68,69,72,75,80) being operatively connected at a first end thereof to a second end of said transverse drive shaft (60,63), and, at a second end thereof, to said pulley means (81,82,83); and
- (f) longitudinal drive shaft means (2,38) comprising a longitudinal shaft (2) operatively connected at a first end thereof to said pulley means (81,82,83) and, at a second end thereof, to propeller means (40);

said pulley means (81,82,83) and longitudinal drive shaft means (2,38) being adapted to be pivoted, when mounted on said watercraft (1), about a horizontal transverse axis so as to raise said propeller means (40) to an inoperable position wherein said longitudinal drive shaft means (2,38) is substantially parallel to said gunwhales (15,16), and lower said propeller means (40) to an operative position wherein said longitudinal drive shaft means (2,38) is at an acute angle relative to said gunwhales (15,16).

9. The apparatus according to claim 8, characterized in that said pulley means (81,82,83) and said longitudinal drive shaft means (2,38) are mounted to and supported by a frame (73,76,78) secured to and rotatable about a round tube portion (77) of said quadrilateral frame (11,12,13,14).

10. The apparatus according to claim 9, characterized in that said frame (73,76,78) comprises a square tube (76) having internal dimensions slightly greater than outer dimensions of said round tube portion (77), said square tube being slidable with said round tube portion (77), and detachably secured thereto by removable pins (86,87) positioned immediately adjacent said frame (73,76,78) on inboard and outboard sides thereof.

11. The apparatus according to any one of claims 8 to 10, characterized in that said pulley means (81,82,83) is mounted on said quadrilateral frame (11,12,13,14) so as to lie outboard of one of said gunwhales (15,16) when in the operative position.

12. The apparatus according to any one of claims 8 to 11, characterized in that said transverse drive shaft (60,63) is rotatably mounted in transverse tube means (65) mounted on said quadrilateral frame (11,12,13,14).

13. The apparatus according to claim 12, characterized in that said transverse tube means (65) comprises a spring-loaded pin (66,70) mounted thereon and in alignment with a corresponding hole formed therein, the pin being of sufficient dimensions to engage with a locking recess (71) formed in an input end housing (69) of the flexible cable-drive means (67,68,69,72,75,80) and limiting translational and rotational movement thereof upon rotation of said transverse drive shaft (60,63).

14. The apparatus according to any one of claims 8 to 13, characterized in that said pulley means (81,82,83) comprises a first pulley (81) operably connected to the second end of said flexible cable-drive means (67,68,69,72,75,80), a second pulley (82) operably connected to the first end of said longitudinal shaft (2), and an endless drive belt (83) for transmission of power from said first pulley (81) to said second pulley (82).

15. The apparatus according to any one of claims 1 to 14, characterized in that said longitudinal shaft (2) is rotatably mounted within a longitudinal tube means (38).

16. The apparatus according to claim 15, characterized in that said apparatus comprises support means (41,42) to support said longitudinal tube means (38), intermediate the ends thereof, in a selected one of said operative and inoperative positions.

17. The apparatus according to any one of claims 1 to 16, characterized in that said operator seat means (4) is adjustably mounted on said quadrilateral frame (11,12,13,14).

18. The apparatus according to any one of claims 1 to 16, characterized in that said operator seat means (4) is rigidly mounted on said quadrilateral frame (11,12,13,14).

19. The apparatus according to any one of claims 1 to 18, characterized in that said drive means comprise chain drive means.

20. A watercraft (1), characterized in that an apparatus as defined in any one of claims 1 to 19 is mounted on the gunwhales (15,16) thereof.

21. The watercraft (1) according to claim 20, characterized in that it is a canoe.